REMARKS

This Preliminary Amendment is filed with a Request for Continued Examination, filed on even date, and is in response to the Final Office Action mailed November 19th, 2004. All objections and rejections are respectfully traversed.

Claims 2-4, 6-13, and 15-29 are in the case.

Claims 6, 7, 8, 9, 10, 11, 15, 18, 21, 24, and 27 have been amended to better claim the invention.

No new claims have been added

At paragraph 6 of the Office Action claim 6 was objected to as containing informalities. Claim 6 has been amended to address this objection.

At paragraphs 7 and 8 of the Office Action claims 15, 18, 21, 24, and 27 were rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out ant distinctly claim the subject matter that the Applicant regards as the invention. The rejection was directed to a number of antecedent basis issues. Appropriate amendment has been made to the claims.

At paragraph 9 and 10 of the Office Action claims 16, 17, 19, 20, 22, 23, 25, 26, 28, and 29 were rejected under 35 U.S.C. §102(e) as being anticipated by Romstrom, U.S. Patent No. 6,438,707, issued on Aug. 20th, 2002 (hereinafter Romstrom).

The present invention, as set forth in representative claim 16, recites in part:

16. A method for operating a network device, comprising:

operating an active supervisor, the active supervisor creating an instance of an event in response to a change in operating state from a requesting application;

providing the event instance to the requesting application and any listening applications that have registered for the event for processing;

passing the event instance to a standby supervisor;

receiving notifications from the requesting and listening applications that they have completed their processing of the event instance;

passing the notifications to the standby supervisor; and

in response to receiving notifications from the requesting and all listening applications, closing the event instance at the active and standby supervisors.

Romstrom describes a fault tolerant computer system including a primary and a backup (standby) processing unit, where the standby unit may "take over" in the event of a failure of the primary unit. Romstrom emphasizes repeatedly that "advantageously, the primary processing unit reports an event message to the backup system only in case the execution of an event is halted." Col. 2, lines 41-43. That is, "as an important feature of the invention [in Romstrom], event messages are generated once the execution of the event process is halted/terminated, thus being able to deliver accurate information about the execution of the event process to the backup system...." Col. 9, lines 7-11.

In sharp contrast the Applicant teaches "***passing the event instance to a standby supervisor***; ***receiving notifications from the requesting and listening applications that they have completed their processing of the event instance***; ***passing the notifications to the standby supervisor***; ***and in response to receiving notifications from the requesting***

and all listening applications, closing the event instance at the active and standby supervisors."

Applicant teaches passing an event instance to the standby supervisor ***before*** the processing of the event is complete, and later notifying the standby processor of the event completion so that it may close the event instance. Advantageously, any events still open when the primary supervisor crashes may be appropriately recovered by the standby supervisor. Romstrom instructs event messages should ***only*** be sent to a backup system ***after*** the execution of the event is halted/terminated. Thus in Romstrom, if the primary system fails, the backup system takes over from the last properly halted/terminated event. When a computer system crashes it does not have the opportunity to tidily halt or terminate all its open events. In Romstrom any uncompleted events are in effect lost, as the backup system has no knowledge of them. Accordingly Romstrom admits that the backup system actually operates "delayed by a very short period of time, e.g. 0.5 ms to 1ms..." behind the primary system, a time delay Applicant posits is due the backup processor redoing events.

Indeed, Romstrom teaches away from Applicant's novel invention. One following the teachings of Romstrom is directed that he or she should "advantageously" and as an "important feature" only report an event message to the backup system when it is terminated/halted, in order to minimize inter-unit communications. See col. 2, lines 41-43 and col. 9, lines 7-11. Thus one would be strongly dissuaded by Romstrom from practicing Applicant's novel invention.

Accordingly, the Applicant respectfully urges that Romstrom is legally insufficient to anticipate the presently claimed under 35 U.S.C. §102 because of the absence of Applicant's claimed novel "***passing the event instance to a standby supervisor; receiving notifications from the requesting and listening applications that they have completed their processing of the event instance; passing the notifications to the standby supervisor***; and ***in response to receiving notifications from the requesting and all listening applications, closing the event instance at the active and standby supervisors***."

At paragraph 11 and 12 of the Office Action claims 12 and 13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Kicklighter, U.S. Patent No. 6,005,841, issued on Dec 21st, 1999 (hereinafter Kicklighter) in view of Freedman, U.S. Patent No. 4,342,083, issued on July 27th, 1982 (hereinafter Freedman)

The present invention, as set forth in representative claim 12, recites in part:

> 12. An intermediate network device for use in a computer network, the network device comprising:
>
> a first supervisor card in communicating relationship with the one or more line cards;
>
> a second supervisor card in communication relations with the first supervisor card;
>
> an application loaded onto the first and second supervisor cards, the application configured to define and manipulate a plurality of state variables;
>
> at least one line card defining a plurality of ports for forwarding messages across the computer network, the at least one line card in communicating relationship with the first and second supervisor cards and configured to receive and maintain port state information from the application; and
>
> a high availability entity disposed on both the first and second supervisor cards, the high availability entities comprising:

an event mechanism for notifying a selected one of the first or second supervisor cards of changes to the application's state variables;

a database mechanism for storing the state variables at the first and second supervisor cards; and

a sequence mechanism for ensuring that the state variables stored at the first and second supervisor cards are consistent with the port state information maintained at the at least one line card, the sequence mechanism resetting the at least one line card in the event that the state variables and the port state information differ after a failure of one of the first or second supervisor cards.

Kicklighter describes a redundancy arrangement for a telecommunications system that uses an active and a standby device in connection with a telecommunication switch. While the active device is in service, the standby device receives all incoming data, but does not process it. When state information held within the active device changes, it sends an event to update the standby device.

Freedman describes a distributed computing system including a plurality of computers connected by communication links. Each computer includes a CPU (104), a Memory (106), a Fault Handler (204), a Scheduler (206) and other devices. Col 7, lines 39-46. A "Synchronizer" module in the Fault Handler of each computer generates "Sampling Numbers" and other messages that to serve in synchronizing of the computers. If a computer looses synchronization or is otherwise faulty, it is detected by the Fault Handlers (204) and messages received from the computer are discarded until the computer is re-synchronized or otherwise repaired. See col. 17, lines 11-66.

Applicant respectfully urges that the combination of Kicklighter and Freedman does not show Applicant's claimed invention relating "***a sequence mechanism for ensur-***

ing that the state variables stored at the first and second supervisor cards are consistent with the port state information maintained at the at least one line card, the sequence mechanism resetting the at least one line card in the event that the state variables and the port state information differ after a failure of one of the first or second supervisor cards."

Applicant teaches a sequence message that compares state variables of supervisor cards with port state information of line cards, and resets a line card if the information differs. As the Examiner admits at page 9, Kicklighter is silent concerning such a sequencing mechanism. The Examiner instead relies on Freedman for disclosure of this feature. Yet Freedman discloses a completely dissimilar mechanism where messages are discarded in response to a faulty unit, such as a computer that has become unsynchronized. In short, while applicant teaches detecting and resetting a line card, Freedman teaches discarding packets.

Therefore the Applicant respectfully urges that the combination of Kicklighter and Freedman is legally insufficient to render the presently claimed invention obvious under 35 U.S.C. § 103 because of the absence of Applicant's claimed novel "***a sequence mechanism for ensuring that the state variables stored at the first and second supervisor cards are consistent with the port state information maintained at the at least one line card, the sequence mechanism resetting the at least one line card in the event that the state variables and the port state information differ after a failure of one of the first or second supervisor cards.***"

At paragraph 13 of the Office Action claims 15, 18, 21, 24, and 27 were rejected under 35 U.S.C. §103(a) as being unpatentable over Horst, U.S. Patent No. 5,838,894, issued on Nov 17, 1998 (hereinafter Horst) in view of Romstrom.

The present invention, as set forth in representative claim 16, recites in part:

> 15. A method for operating a network device, comprising:
>
> operating an active supervisor, the active supervisor receiving state information from at least one line card;
>
> ***generating a sequence number by the active supervisor in response to receipt of the state information;***
>
> ***returning the sequence number to the at least one line card;***
>
> ***storing the state information and sequence number to a standby supervisor;***
>
> in response to failure of the active supervisor, switching control to the standby supervisor;
>
> ***comparing, by the standby supervisor, a stored sequence number with a reported sequence number, the reported sequence number reported by a line card;*** and
>
> ***resetting the line card if the reported sequence number is different than the stored sequence number.***

Horst describes a computing system with a pair of CPUs that intercommunicates with two or more routers. A SYNC CLK command is provided that resets the routers and causes them to enter a "temporary non-operating reset state." See col. 77, lines 36-49. Similarly, CPUs may halt and restart their clocks in response to the SYNC CLK command. See Fig. 31A, items 962-964.

Romstrom, as discussed earlier, describes a primary system that passes event information for terminated/halted events to a backup system. See Fig. 6 and col. 16, lines

55 to col. 17, line 3. In addition, "if fault detection means are incorporated into the backup system, the event data generated at the backup system may readily be compared to the event data generated at the primary system...." Col. 16, lines 9-12.

Applicant respectfully urges that the combination of Horst and Romstrom does not show Applicant's claimed invention relating "***generating a sequence number by the active supervisor in response to receipt of the state information; returning the sequence number to the at least one line card; storing the state information and sequence number to a standby supervisor... comparing, by the standby supervisor, a stored sequence number with a reported sequence number, the reported sequence number reported by a line card; and resetting the line card if the reported sequence number is different than the stored sequence number***."

Both Horst and Romstrom are completely silent regarding generating a sequence number at a primary unit, sending the sequence numbers to a line card, and in response to take over by a standby unit, sending the sequence number back from the line card to the standby unit to check synchronization. Horst simply describes a SYNC CLK command that causes a plurality of routers and CPUs to go offline and enter a "temporary non-operating reset state" in order to synchronization their clocks with a CPU. See col. 77, lines 36-49. This is in effect a reboot of the entire system. Romstrom is similarly silent concerning the Applicant's invention. Romstrom merely describes passing event messages between a primary and backup system, and in one embodiment comparing event

data between the two systems to detect an error. No sequence messages are exchanged with line cards or other external devices, and no line cards are reset.

Therefore the Applicant respectfully urges that the combination of Horst and Romstrom is legally insufficient to render the presently claimed invention obvious under 35 U.S.C. § 103 because of the absence of Applicant's claimed novel "***generating a sequence number by the active supervisor in response to receipt of the state information; returning the sequence number to the at least one line card; storing the state information and sequence number to a standby supervisor... comparing, by the standby supervisor, a stored sequence number with a reported sequence number, the reported sequence number reported by a line card; and resetting the line card if the reported sequence number is different than the stored sequence number***."

All independent claims are believed to be in condition for allowance.

All dependent claims are believed to be dependent from allowable independent claims.

Applicant respectfully solicits favorable action.

In the event that the Examiner deems personal contact desirable in disposition of this case, the Examiner is encouraged to call the undersigned attorney at (617) 951-3078.

Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

Respectfully submitted,

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